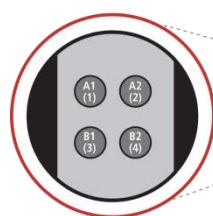
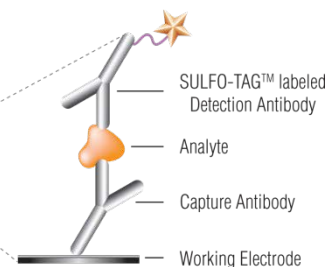
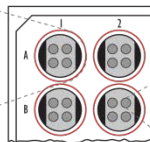


MSD[®] Total p38 Assay Whole Cell Lysate Kit

For quantitative determination in human, non-human primate, mouse, and rat whole cell lysate samples



MSD MULTI-SPOT[®]
96-Well 4-Spot Plate



1. Total p38
2. BSA blocked
3. BSA blocked
4. BSA blocked

The serine/threonine kinase p38 also known as RK, SAPK2A, and CSBP is involved in mediating cellular responses to inflammatory cytokines and environmental stresses such as osmotic shock and UV light.¹ Four isoforms (α , β , γ , δ) of p38 have been identified. Activation of p38 by phosphorylation of threonine 180 and tyrosine 182 is controlled by several upstream kinases including MKK3, MKK6, and MKK4 (SEK).² Activated p38 in turn can phosphorylate MAPKAPK2, PRAK kinase, and the transcription factors ATF-2, MAX, CHOP, and MEF2.³ The p38 signaling pathway regulates various biological processes such as cytokine production, transcriptional regulation, cell proliferation, cell differentiation, and apoptosis.³ The MSD Total p38 assay is available on 96-well, 4-spot plates. This datasheet outlines the performance of the assay.

Alzheimer's Disease
Angiogenesis
BioProcess
Cardiac
Cell Signaling
Clinical Immunology
Cytokines
Growth Factors
Hypoxia
Immunogenicity
Inflammation
Metabolic
Oncology
Toxicology
Vascular

Catalog Numbers

Total p38 Kit	
Kit Size	Catalog #
1 plate	K150CZD-1
5 plates	K150CZD-2
20 plates	K150CZD-3

Typical Data

Representative results for the Total p38 Kit are shown below. The signal and ratio values provided are examples; individual results will vary depending upon the samples tested. Western blot analyses of each lysate type are shown for comparison.

Cell lysate from growing Jurkat cells treated with 50 nM calyculin A and 200 nM PMA for 15 minutes to stimulate phosphorylation (positive) or cell lysate from growing Jurkat treated cells treated with 1 μ M rapamycin for 3 hours to inhibit phosphorylation (negative) were added to MSD MULTI-SPOT[®], 4-spot plates coated with anti-total p38 antibody on one of the four spatially distinct electrodes in each well. Total p38 was detected with anti-total p38 antibody conjugated with MSD SULFO-TAG[™].

Ordering Information

MSD Customer Service
Phone: 1-301-947-2085
Fax: 1-301-990-2776
Email: CustomerService@mesoscale.com

Scientific Support

Phone: 1-301-947-2025
Email: ScientificSupport@mesoscale.com

Company Address

MESO SCALE DISCOVERY[®]
A division of
Meso Scale Diagnostics, LLC.
1601 Research Boulevard
Rockville, MD 20850-3173 USA

www.mesoscale.com[®]

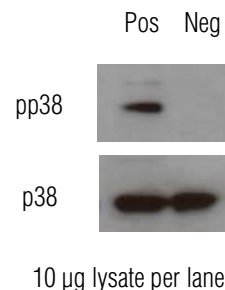
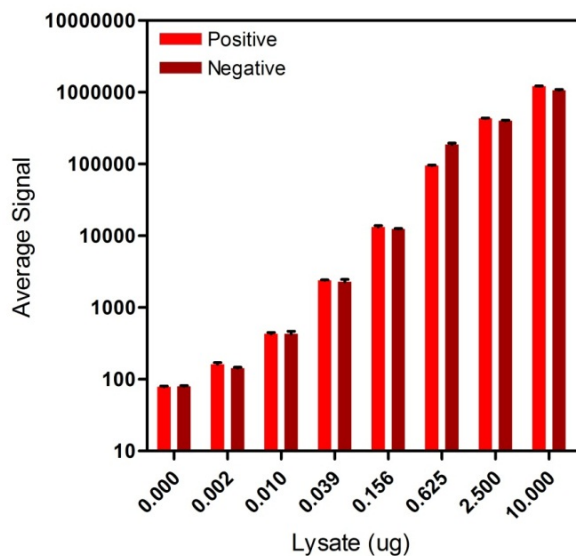


Figure 1: Sample data generated with Total p38 Assay. Increased signal for Total p38 was observed with phospho-p38 positive cell lysates. The Total p38 Assay provides a measure of the data obtained with the traditional Western blot.

For Research Use Only.
Not for use in
diagnostic procedures.

MSD Cell Signaling Assays

Lysate Titration

Data for positive and negative cell lysates assayed using the Total p38 Kit are presented below.

Lysate (μ g)/well	Positive			Negative			P/N
	Average Signal	StdDev	%CV	Average Signal	StdDev	%CV	
0	79	2	0.7	80	1	2.2	
0.002	162	8	1.2	143	5	1.6	1.1
0.010	428	20	1.5	427	40	4.5	1.0
0.039	2382	51	4.9	2278	180	2.0	1.0
0.156	13 235	655	2.1	12 415	250	7.9	1.1
0.625	94 878	1384	4.6	187 333	8489	9.3	0.5
2.5	432 265	5137	5.2	401 100	6532	3.5	1.1
10	1 217 321	8960	2.7	1 067 883	23 105	1.8	1.1

For a complete list of products, please visit our website at www.mesoscale.com.

The MSD Advantage

- **Multiplexing:** Multiple analytes can be measured in one well using typical sample volumes of 25 μ L or less without compromising speed or performance
- **Large dynamic range:** Linear range of up to five logs enables the measurement of native levels of biomarkers in normal and diseased samples without multiple dilutions
- **Minimal background:** The stimulation mechanism (electricity) is decoupled from the response (light signal), minimizing matrix interference
- **Simple protocols:** Only labels bound near the electrode surface are excited, enabling assays with fewer washes
- **Flexibility:** Labels are stable, non-radioactive, and conveniently conjugated to biological molecules

References

1. Rouse J, et al. A novel kinase cascade triggered by stress and heat shock that stimulates MAPKAP kinase-2 and phosphorylation of the small heat shock proteins. *Cell*. 1994 Sep 23;78(6):1027-37.
2. Raingeaud J, et al. Pro-inflammatory cytokines and environmental stress cause p38 mitogen-activated protein kinase activation by dual phosphorylation on tyrosine and threonine. *J Biol Chem*. 1995 Mar 31;270(13):7420-6.
3. Zarubin T, Han J. Activation and signaling of the p38 MAP kinase pathway. *Cell Res*. 2005 Jan;15(1):11-8.

MESO SCALE DISCOVERY, MESO SCALE DIAGNOSTICS, MSD, DISCOVERY WORKBENCH, MULTI-ARRAY, MULTI-SPOT, QUICKPLEX, SECTOR, SECTOR PR, SECTOR HTS, SULFO-TAG, V-PLEX, STREPTAVIDIN GOLD, MESO, www.mesoscale.com, SMALL SPOT (design), 96 WELL 1, 4, 7, & 10-SPOT (designs), 384 WELL 1 & 4-SPOT (designs), MSD (design), and SPOT THE DIFFERENCE are trademarks and/or service marks of Meso Scale Diagnostics, LLC. ©2013 Meso Scale Diagnostics, LLC. All rights reserved.

